

REMARKS

Claims 1-10 and 17 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Ishi (U.S. Patent No. 5,800,935). Applicants respectfully traverse the rejection because FIG. 1 of the Ishi reference does not disclose (or suggest) an upper shield layer having first and second interfaces extending along a common datum plane, as now recited in amended claim 1. The Ishi reference discloses in FIG. 1A an MR layer 6 and lead layers 8 that have a non-magnetic gap layer 3b deposited thereon. A shield layer 2b is positioned on the non-magnetic gap layer 3b. In the Office Action dated October 17, 2002 (Paper No. 1), the Examiner identifies interfaces  $I_1$  and  $I_2$  that correspond to different datum planes. That is, relative to the substrate 1, the surfaces of the interfaces  $I_1$  and  $I_2$  identified by the Examiner are at different heights, and therefore define different datum planes.

Applicants' claim 1, as amended, calls for an upper shield layer that has a first interface extending along a datum plane, and a second interface extending along the datum plane. As shown in FIG. 5 of the present application, the first and second interfaces 52 and 53 extend along a common datum plane 51 (see Applicants' specification, pg. 15, lns. 29-31).

Since FIG. 1 of the Ishi reference does not disclose or suggest first and second interfaces along a common datum plane, as now recited in amended claim 1, withdrawal of the §102 rejection of claim 1 is respectfully requested. Claims 2-10 depend either directly or indirectly from claim 1, and are considered allowable for the reasons recited above with respect to the rejection of independent claim 1.

With respect to the rejection of claim 17, Applicants' have further defined the groove as being formed between the first interface and the second interface on the upper shield layer. As amended, Applicants' traverse the rejection to claim 17 because FIG. 1 of the Ishi reference does not disclose or suggest forming a groove between the interfaces  $I_1$  and  $I_2$ . Rather, FIG. 1 of the Ishi reference merely discloses a first interface  $I_1$  gradually rising to meet a second interface  $I_2$  without any grooves being formed between the first and second interfaces. That is, FIG. 1 of the Ishi reference does not disclose a groove that isolates the first and second interfaces from each other, as recited in amended claim 17. For this reason, withdrawal of the §102 rejection to amended claim 17 is respectfully requested.

Claims 11-16 stand rejected under 35 U.S.C. §103(a) as being obvious over Ishi in view of Saito (U.S. Patent No. 6,343,022), and further in view of Saito (U.S. Patent No. 6,094,328). Applicants respectfully traverse the rejection of claim 11 because the cited references do not disclose or suggest a magnetoresistive transducer having a product between the height of a raised portion and a magnetization intensity of an upper shield layer that is set smaller than a product between a thickness and a magnetization intensity of a domain control layer.

The Examiner focuses on Col. 2, ln. 64 to Col. 3, ln. 6 of the Saito '328 reference to reject claim 11. Applicants submit that the Saito '328 reference fails to disclose or suggest a thickness or magnetization intensity of the upper shield layer, as specified in claim 11. The Examiner indicates that the magnetization intensity can be controlled by an

appropriate choice of material and thickness of the domain control layer (hard magnetic layer), which would cause a product (P1) between the height of the raised portion and a magnetization intensity of the upper shield layer to be set larger than the product (P2) between the thickness and a magnetization intensity of the domain control layer. However, the Saito '328 reference fails to disclose or suggest which relationship, namely P1 being greater than P2, or P1 being less than P2, that should be selected.

In contrast, the present invention as recited in claim 11 clearly defines that P1 is smaller than P2. This product relationship causes the magnetic pulse generated on a domain control layer to be less influenced by the magnetic poles generated on the upper shield layer, *i.e.*, the raised portion. Reduction in the longitudinal bias field is thus sufficiently avoided (see Applicants' specification pg. 5, ln. 29 to pg. 6, ln. 6). The Saito '328 reference does not suggest any reason for selecting the above product relationship selection. That is, the importance of P1 relative to P2 is not discussed in the Saito '328 reference. Thus, one skilled in the art would not be motivated to make P1 less than P2 in light of the Saito '328 reference to avoid reduction in a longitudinal bias field. Claims 12-15 depend either directly or indirectly from claim 11, and are considered allowable based on their chain of dependency.

Claim 16 defines the domain control layers as magnetized in a normal longitudinal direction across the magnetoresistive film. Claim 16 further defines the upper shield layer as magnetized in a reserve longitudinal direction opposite to the normal

longitudinal direction. The normal longitudinal direction and the reverse longitudinal direction are in parallel with a track width direction (see FIG. 11 of the present application).


In the Examiner's response to point C on pg. 5, lns. 9-16, the Examiner focuses on FIG. 2 of the Saito '022 reference. FIG. 2 is a sectional view of a magnetoresistive thin film head, which is perpendicular to a plane of a recording medium D. The track width direction should correspond to a direction above or below the plane defined by the paper's surface that is illustrated in FIG. 2. As a result, the track width direction cannot be indicated in FIG. 2. Therefore, the arrow directions in FIG. 2 are not applicable to the normal and reverse longitudinal directions presently defined in claim 16. Moreover, the Saito '022 reference fails to disclose or suggest the direction of the magnetization of the domain control layer. That is, the domain control layer is not shown in FIG. 2 of the Saito '022 reference. Since the Saito '022 reference does not disclose or suggest an upper shield layer magnetized in a reversed longitudinal direction opposite to the normal longitudinal direction, Applicants request withdrawal of the §103 rejection to claim 16.

For all of the above reasons, Applicants request reconsideration and allowance of the claimed invention. The Examiner should call Applicants' attorney if an interview would expedite prosecution.

Respectfully submitted,

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